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as the temperature, except in those years in which the summer is unusually warm, when the mortality of the summer may even exceed that of the winter season. In other instances, the mortality of the summer months will rank next to that of the winter or autumn.

It is only necessary to observe in conclusion, that as this attempt combines two of the most variable things in nature, the weather and the condition of the human body, it is scarcely to be expected that any more definite results than those now obtained should have been wrought out. As much has been done with the scanty materials at my command, as I expected to accomplish, and it formed no part of my plan to quote the results at which other enquirers had arrived. Suffice it to state that between this attempt and the labours of others there is that general correspondence which will render each confirmatory of the other.

Report of a Committee of the British Association for the Advancement of Science, consisting of Lieut.-Col. W. H. SYKES, F.R.S., Lord SANDON, M.P., G. R. PORTER, Esq., F.R.S., J. HEYWOOD, Esq., F.R.S., Dr. W. P. ALISON, *and* E. CHADWICK, Esq., *on the Vital Statistics of Large Towns in Scotland.*

[*Abstracted from the Transactions of the British Association for the Advancement of Science.*]

THIS Committee, in pursuance of a resolution of the General Committee of the British Association, at Glasgow, in 1840, selected the towns of Edinburgh with Leith, Glasgow, Aberdeen, Perth, and Dundee, as being those likely to supply the most useful materials for comparison, as well because of the circumstances in which they agree as of those in which they differ from each other. Mr. Alexander Watt, of Glasgow, who has established a claim to public respect by his mortality bills of Glasgow, and other statistical works, was good enough to undertake the severe labour of accumulating and digesting the facts contained in its report, which demanded of him no ordinary perseverance and tact to obviate the defects entailed by the very imperfect state of the registers of marriages, births, and deaths in Scotland. The results of his labours, when presented to the Committee, were found, indeed, to be embarrassing, not from any paucity of matter, but from their elaborateness and amount of detail, which precluded their publication in the annual volume of the transactions of the Association. The Chairman of the Committee, Colonel Sykes, appears, therefore, to have subjected the whole to a further laborious process of reduction, by which all the most valuable materials have been brought within the limits of 80 tables, and the like number of pages, in lieu of 119 tables and 199 pages. The Committee, in regretting the want of some systematic plan of registration in Scotland, for the purposes of vital statistics, express, nevertheless, a conviction that the facts accumulated open up a prospect of ascertaining, in the continued progress of their researches, certain physical laws in vital statistics, the knowledge of which may be of considerable importance, not only in the formation of more correct estimates of the value of life in different grades, and at different ages, but also in guiding the judgment of the legislator and the philanthropist in encountering the physical evils resulting from moral causes.

Marriages.—The number of marriages is derived from the proclamations of marriages, with due allowance for the cases in which the parties resided in different parishes, and in which there were, therefore, two proclamations for one marriage. It is known, however, that several irregularities are of occasional occurrence in relation to the proclamations of marriages; notwithstanding which the tables of marriages, constructed as they are from the returns made by the respective session clerks, may be considered as nearer to the truth than any tables in other departments of vital statistics in Scotland; so very defective and partial is the system of registering births and deaths that exists in that country.

In Edinburgh, in 1841, the population was 138,182, and the number of marriages 1,007, or 0·728 per cent.; in Leith, 28,372, and 274, or 0·965 per cent.; in Glasgow, 282,134, and 2,382, or 0·844 per cent.; in Aberdeen, 64,778, and 479, or 0·739 per cent.; in Perth, 22,172, and 132, or 0·595 per cent.; and in Dundee, 61,540, and 529, or 0·859 per cent.

In Edinburgh, the average annual number of males married in the three years ended with 1841, compared with the number of male inhabitants ascertained by the census of 1841 was as 1 to 60·725, or 1,646 per cent.; of females, compared with the female population, as 1 to 73·185, or 1,366 per cent.; being a greater proportion of the male than of the female population by 0·280 per cent.; but there being, by the census of 1841, 125·37 females to every 100 males in Edinburgh, it appears that on the average of these years there were 3·87 per cent. more females than males married.

In Leith, in like manner, the males married were as 1 to 51·857, or 1·928 per cent.; the females as 1 to 61·508, or 1·625 per cent.; being an excess on the part of the males of 0·303 per cent.; while the number of females to the males being 114·27 to every 100, there were 3·65 per cent. more males than females married.

In Glasgow, the marriages of males, on the average of five years, ended with 1841, were as 1 to 61·333, or 1·630 per cent.; females 1 to 68·325, or 1·463 per cent.; excess on the part of the males 0·167 per cent.; but there being 110·41 females to 100 males there were only 0·887 fewer females than males married.

In Aberdeen, on the like average, the number of males married was as 1 to 62·609, or 1·594 per cent.; females 1 to 80·266, or 1·245 per cent.; being a greater proportion of males by 0·352 per cent.; but there being 128·59 females to 100 males, there were 0·30 per cent. more females than males married.

In Perth and Kinnoul, on the like average, the males married were 1 to 73·471, or 1·361 per cent.; the females 1 to 80·094, or 1·248 per cent.; being a greater proportion of males by 0·113 per cent.; but there being 115·55 females to 100 males, there were positively 5·66 per cent. more females than males married.

In Dundee, on an average of the same years, the males married were as 1 to 54·486, or 1·835 per cent.; the females 1 to 65·904, or 1·517 per cent.; being a greater proportion of the males by 318 per cent.; and although there are 117·37 females to 100 males, 2·96 per cent. more males than females were married.

I.—*Average Annual Proportion of Marriages in the Towns comprised in the Report compared with each other.*

Places.	Individuals Married to Population as 1 to	Per Centage.	Marriages to Population as 1 to	Per Centage.
Edinburgh and Leith .	65·026	1·537	131·088	0·762
Glasgow and Parishes .	64·813	1·542	120·290	9·831
Aberdeen	71·451	1·399	140·004	0·714
Perth and Kinnoul . .	76·879	1·300	159·728	0·626
Dundee	60·109	1·663	111·426	0·897

The differences in the amount of these annual marriages are found to be very great; but to point out the exact causes of these differences would require a more minute and accurate knowledge of the moral condition and physical circumstances of the people than we are possessed of; but by the present statement of facts an advance is made which has long been desired in Scotland, where so little attention has been generally paid to vital statistics. These tables open a new field, though still a limited one, to the statist, whose object it is to trace the immediate causes of changes which affect the welfare of the people, with a view to suggest such improvements as may arrest in its progress a retrograde movement in the condition of the inhabitants of large towns: a movement to which public attention has been of late so often drawn.

To acquire, for instance, a correct knowledge of the causes of the great difference in the amount of annual marriages in Perth and in Dundee, would be of moment. These two towns are situated within 20 miles of each other, with every facility of intercourse by coach and by steam-boat.

A large proportion of the inhabitants of Perth are in easy and comfortable circumstances; and it will be observed, that the average annual amount of marriages in that city for the last five years is 1 to 159·72, while in Dundee, where there is a large proportion of poor 'and destitute people, as appears from the great proportion of burials at the public expense, the average annual amount of marriages for the last five years, to the mean population, is as 1 to 111·42!

In Edinburgh, exclusive of Leith, the average annual amount of marriages for the last three years, to the mean population, is as 1 to 136·39, while in Leith, with numerous poor, they are as 1 to 110·06 to the mean population of these years. In Glasgow and suburbs, where a very large proportion of the inhabitants is in destitute circumstances, arising from the influx of labour being greater than the demand, and from other causes, the average annual amount of marriages, to the mean population, for the last five years, is as 1 to 120·29.

And in Aberdeen, where the poor and destitute bear a much smaller proportion to the whole inhabitants than they do in Glasgow, the average annual amount of resident marriages is as 1 to 140·00. It would appear from these observations, therefore, that in those towns where there is the greatest amount of poverty and destitution, and where, as will afterwards appear, the mortality is greatest, the annual number of marriages is the greatest. It is to be feared a moral law is here shadowed out, the result of physical causes; but we would not, however, be understood as coming at once to this conclusion, although in accordance with other observations, as there is much yet required to be done by the statist before we can arrive at a full and accurate knowledge of the social condition of the inhabitants of large towns in Scotland. Were the registers so kept that we could ascertain the ages and occupations of the parties married, more light would be thrown on this subject.

The extent to which prudential motives operate on the respectable portion of the mechanics and artizans of towns in prevention of early marriages, appears to be considerable. The desire to establish themselves first in comfortably furnished houses is alone a sufficient check. But if we look to the condition of that numerous class of the inhabitants of towns who have sunk, more especially of late years, into a reckless state of poverty, and where the prevalence of fever and other diseases, together with a limited supply of work by which they can earn a livelihood, have reduced masses of them to an extreme state of wretchedness, we shall find a very different feeling. In the large towns of Scotland this wretchedness is known to exist not only from personal inquiry, but it has been ably pointed out in late publications. So far from it operating as a check, the very hopelessness of their condition would seem to make this class blind and callous to consequences; and unions are formed which ultimately can only enhance their sufferings.

The importance of obtaining correct statistical information, therefore, as to the amount of annual marriages among the *different classes* of society, requires no further illustration; and though we are aware of the caution to be observed in coming to any conclusion from the facts yet obtained and detailed in the foregoing pages (imperfect as the system of registration may be from which our data are obtained), yet these data prove that the greatest amount of marriages is found to take place in those localities where the greatest proportion of the wretchedly poor are congregated together; and this fact goes far to strengthen the opinion that the diminution of destitution, by raising a great mass of the town population above their present reckless state of poverty, would prove a salutary check upon early marriages, by giving a taste for the comforts and decencies of life.

Births.—The inattention which prevails among parents in Scotland in regard to the recording of the births of their children in the public registers, even though the parties themselves continue to experience great inconvenience on many occasions on account of the omission, is so very great as to render the abstracts of births of no avail to the statist, in so far at least as regards the statistics of human life. If we compare the proportion of births recorded for England and Wales, as exhibited in the Registrar-General's Report for 1839-40, the year for which the number of births for England has been most fully ascertained, we may form a pretty correct judgment of the deficiency of the registers of births in Scotland. The proportion of births recorded for England and Wales for 1839-40 to the population of 1841 is 3·153 per cent., while the number of births or baptisms recorded for Edinburgh and Leith for the years exhibited in the preceding abstracts, to the mean population of these years, is 0·992 per cent.; for Aberdeen 1·311 per cent.; for

Glasgow 1·160 per cent.; for Dundee 1·497 per cent.; and for Perth 1·704 per cent. It will thus be perceived that the smallest proportion of births or baptisms are recorded for Edinburgh and Leith, and the greatest for Perth; and that the whole of these records are so incomplete, as to give no indication of the true number of births for these towns.

The abstracts of births or baptisms are, therefore, useless to the statist, and the only advantage to be derived from their publication is the proof they afford of the utter inefficiency of the present mode of registering births in Scotland, and to show the necessity there is for some legislative measure being obtained to remedy this great national defect. Among the public as well as private advantages which would arise from the improvement of Scotch registers of births, it may be mentioned, that, in the event of an alteration taking place in the Poor Laws of the country, complete registers of this nature would be the most legitimate and least inconvenient means of proving the birth-place of parties requiring aid from the public funds.

More than one attempt has been made in Glasgow to obtain complete returns of the amount of children baptized, from the clergymen of all denominations, within the limits of the bills of mortality, without leading to a satisfactory result. It is therefore to be feared, that this very important branch of the vital statistics of Scotland must remain incomplete till Government be induced to apply a remedy.

Deaths.—The want of a proper system for the registration of deaths, as well as of births and marriages, has long been much felt in Scotland, and repeated attempts have been made to introduce a legislative measure for some improvement, but without success. In the absence of a proper system for the registration of deaths, considerable attention has been paid by the magistrates, kirk sessions, and other parties in some of the large towns, in whom is vested the management of burial-grounds, to procure registers of burials. No uniform or systematic method of recording the causes of death has been adopted; but in some of the towns the names of the fatal diseases, as stated by the friends of the deceased, together with the ages at which death took place, have been carefully noted, and the data from which the committee's tables have been constructed have been obtained from these records. In Aberdeen the causes of death have been but partially recorded, which renders the tables for that city less satisfactory than they could have desired. In all cases, however, the ages at which death took place appear to have been carefully attended to, which is an important feature in the tables.

The only portion of these towns where a proper system of recording the diseases which cause death is to be found, is in the parish of South Leith, where Mr. Lyon has introduced the system recommended by the Committee of the Royal College of Physicians of Edinburgh, appointed to consider the best mode of framing public registers of deaths. This system is admirably adapted for the purpose, and it would be most advantageous to the advancement of our knowledge of the vital statistics of the country were it uniformly adopted for all burying-ground registers.

Whatever defects, however, may be observable in the arrangement of diseases in these tables, as the registers from which the information is obtained are kept in a manner similar to each other, and the data brought out in the tables on an uniform plan, a comparison of the amount of mortality exhibited under the heads of the different diseases and at various ages in the different towns, will necessarily afford useful information.

One of the distinguishing features of these disease tables is, that the number of deaths at the different ages is made to appear under the head of the diseases which caused death at these ages; and, as one of the objects of constructing them is for reference, those whose local and general information on these matters may enable them to assist in advancing our knowledge of the physical and moral condition of the people, the proportions which the deaths at the different ages, and the proportions which the amount of fatal diseases bear to the whole deaths, and also to the population of the different towns, are carefully exhibited in separate columns.

In those tables in which the amount of deaths by the several diseases at different ages is specified, in some cases for five and in others for three years, not only the number as compared with the population is given, but the proportion per cent. of the deaths at the different ages, and of the causes of death, are added; these proportions being better suited to a comparison of the mortality which takes place in the several towns.

Comparing the mortality of the different towns each year with their population as ascertained by the census of 1841, it is obvious that the proportion of deaths, in all the years antecedent to 1841, would appear under the truth. As we may assume that the increase of population from 1831 to 1841 has been progressively uniform during the intervening years, the amount of population for the several towns of Scotland, as exhibited in the tables, has been calculated accordingly; and on the amount of population thus obtained, the proportions of the relative mortality of the different towns have been calculated.

As it is an object of great interest and importance to observe the effect of the seasons on the amount of mortality in different localities, tables are added, showing the amount of deaths monthly for these towns, and also exhibiting the proportions which the average of deaths in each month bear to the annual average of deaths.

Tables are also given, showing the amount of deaths by fever and eruptive diseases under five, under twenty, and above twenty years of age, and the proportion the deaths by these diseases bear to the whole deaths. The results exhibited in these tables are well worthy of consideration. In the present limited state of our knowledge of the vital statistics of the country, it is obviously desirable that a minute and varied analysis should be made of the fatal effects produced by the various diseases on our population at different ages, and under every variety of circumstances. By such analysis we may be enabled to trace those general laws by which nature appears to govern the distribution of disease and mortality. Should this object be attained, a most important step would be gained in the progress of our knowledge of vital statistics, and the science itself be enhanced in utility.

For several years much labour has been bestowed on the Mortality Bills of Glasgow, in order to exhibit the amount of mortality arising from the various diseases at different ages; considerable uniformity was noted in the results of the fever and eruptive fever tables of Glasgow and other towns; and the confirmation this uniformity has received from the more extended results now before us, leads to the belief that it cannot be looked upon as a matter of chance, but that it indicates the possibility of our arriving, by a still more extended sphere of observation, and by a more correct system in the registration of the fatal diseases, at a knowledge of precise laws which seem to regulate the amount of deaths at different ages by fever and eruptive diseases. It may be too much to speak confidently of arriving at this very desirable result, yet the evidence is sufficiently strong to justify the bringing these circumstances under particular notice, which will be done in the remarks we have to make on the leading results brought out in these tables.

With regard to the hospitals and dispensaries for the poor inhabitants of these towns, they are placed on a very equal footing. To visit the Royal Infirmary or the Dispensary of any one of these towns, will lead to a correct judgment of all the others. Differences may be observed as to the newness of the building, or in some of the minor arrangements, but superintended as they all are by suitable officers, the same high character of efficiency is common to all of them, and renders the benefit they confer on the poor and destitute in time of sickness and bodily distress one of the greatest blessings they enjoy. The differences, therefore, that are to be observed in the amount of mortality in the towns, are not traceable to differences in the means of affording medical relief.

It is impossible to introduce within the present narrow limits the mass of tables prepared by the Committee, which present an elaborate double analysis of the mortality registers above described, according to the locality, the immediate causes of death, and the ages of the deceased. Some of the summaries, however, demand especial notice, as well as the inferences drawn from them:—

II.—*Table exhibiting the Annual average* Number of Deaths under* FIVE *years of Age, in five of the principal Towns of Scotland, with the proportion which these Deaths bear to the Total average Annual Amount of Deaths, as well as to the Population, in the different Towns; also the comparative rate of Mortality at these Ages in Edinburgh, and the other Towns mentioned in the Table.*

Towns.	Males.	Females.	Total.	Mean Population.	Proportion of the average Annual Deaths at these Ages to the whole average Annual Deaths.	Comparative Rate to the average Annual Deaths.		Per Centage of the mean Population.	Comparative Rate to the mean Population.	
						Greater than in Edinburgh.	Less than in Edinburgh.		Greater than in Edinburgh	Less than in Edinburgh.
						Per cent.	Per cent.			
Edinburgh	632⅓	551⅓	1,183⅔	137,986	33·626	..	..	0·857	..	..
Glasgow .	2,015	1,769	3,784	264,010	44·586	10·960	..	1·438	0·576	..
Aberdeen.	199⅗	175⅗	374⅗	63,366	29·399	..	4·227	0·591	..	0·266
Perth. .	76⅗	77⅗	154⅕	19,435	30·046	..	3·580	0·793	..	0·064
Dundee .	345⅓	329⅔	675	59,691	46·820	13·194	..	1·130	0·273	..

* It has been observed, that the average is for five years in Glasgow, Aberdeen, and Perth, while for Edinburgh and Dundee the average is only for three years.

III.—*Table exhibiting the Annual average Number of Deaths under* TWENTY *years of Age, in five of the principal Towns of Scotland, with the proportion which these Deaths bear to the Total average Annual Amount of Deaths, as well as to the Population, in the different Towns; also the comparative rate of Mortality at these Ages in Edinburgh, and the other Towns mentioned in the Table.*

Towns.	Males.	Females.	Total.	Mean Population.	Proportion of the average Annual Deaths at these Ages to the whole average Annual Deaths.	Comparative Rate to the average Annual Deaths.		Per Centage of the mean Population.	Comparative Rate to the mean Population.	
						Greater than in Edinburgh.	Less than in Edinburgh.		Greater than in Edinburgh.	Less than in Edinburgh.
					Per cent.	Per cent.	Per cent.			
Edinburgh	815⅔	729	1,544⅔	137,986	43·882	..	..	1·119	..	..
Glasgow .	2,510⅘	2,238⅕	4,749	264,010	55·957	12·075	..	1·798	0·679	..
Aberdeen.	292⅗	257⅕	549⅘	63,366	43·148	..	0·734	0·867	..	0·252
Perth. .	100	96⅖	196⅖	19,435	38·269	..	5·613	1·010	..	0·109
Dundee .	426	403⅓	829⅓	59,691	57·526	13·644	..	1·389	0·270	..

IV.—*Table exhibiting the Annual average Number of Deaths at* TWENTY *years of Age* AND UPWARDS, *in five of the principal Towns of Scotland, with the proportion which these Deaths bear to the Total average Annual Amount of Deaths, as well as to the Population, in the different Towns; also the comparative rate of Mortality at these Ages in Edinbugh, and the other Towns mentioned in the Table.*

Towns.	Males	Females.	Total.	Mean Population.	Proportion of the average Annual Deaths at these Ages to the whole average Annual Deaths.	Comparative Rate to the average Annual Deaths.		Per Centage of the mean Population.	Comparative Rate to the mean Population.	
						Greater than in Edinburgh.	Less than in Edinburgh.		Greater than in Edinburgh.	Less than in Edinburgh.
					Per eent.	Per cent.	Per cent.			
Edinburgh	916⅔	1,058⅔	1,975⅓	137,986	56·117	..	..	1·431	..	..
Glasgow .	1,848⅕	1,889⅗	3,737⅘	264,010	44.042	..	12,075	1·415	..	0·016
Aberdeen.	341⅘	382⅗	724⅖	63,366	56·851	0·734	..	1·142	..	0·289
Perth . .	149	167⅘	316⅘	19,435	61·730	5·613	..	1·630	0·199	..
Dundee .	284	328⅓	612⅓	59,691	42·473	..	13,644	1·025	..	0·406

V.—*Proportion of Deaths to the Population in the great Towns of Scotland in the following Years.*

	Edinburgh.		Leith.		Glasgow.		Aberdeen.		Perth.		Dundee.	
	Deaths to Population, as 1 to	Per-centage.	Deaths to Population, as 1 to	Per-centage.	Deaths to Population, as 1 to	Per-centage.	Deaths to Population, as 1 to	Per-centage.	Deaths to Population, as 1 to	Per-centage.	Deaths to Population, as 1 to	Per-centage.
1836	..	..	40·841	2·448	28·308	3·532	..	..	..	..	..	..
1837	27·419	3·647	30·831	3·241	24·054	4·157	44·529	2·245	31 674	3·157	..	..
1838	32·932	3·036	32·002	3·124	36·842	2·710	44·416	2·251	35·289	2·833	40·197	2·487
1839	40·937	2·442	41·010	2·438	35·084	2·850	55·100	1·814	48·649	2·355	35·153	2·844
1840	37·414	2·672	39·581	2·526	30·973	3·232	46·258	2·161	46·068	2·170	45·220	2·211
1841	39·537	2·529	43·851	2·280	31·750	3·149	62·647	1·596	44·882	2·228	45·316	2·206

VI.—*Comparative per centage Monthly Mortality in the different Towns reported on.*

Months.	Monthly per centage of Deaths to the whole Deaths; average of five Years.				
	Edinburgh.	Glasgow.	Aberdeen.	Perth.	Dundee.
January . . .	10·198	12·428	11·379	13·561	14·516
February . . .	9·026	10·465	10·930	10·829	10·465
March . . .	8·532	9·534	9·433	8·690	8·763
April	8·679	8·279	8·953	8·778	8·205
May	8·049	7·392	8·381	8·651	8·497
June	8·023	7·171	7·898	6·040	7·561
July	7·793	7·189	7·000	6·858	6·973
August . . .	7·452	7·984	6·498	7·677	6·681
September . .	8·219	7·558	7·104	7·570	6·587
October . . .	7·566	7·154	7·173	7·131	7·437
November . .	8·904	7·902	8·012	8·054	7·205
December . .	9·517	8·948	9·307	8·183	9·068

The influence of extreme cold on the amount of mortality has been frequently noticed by writers on this subject; and though others have attributed the excess of mortality which is sometimes observable more to sudden changes of temperature than to extreme cold, it is very evident that excessive cold, though it is not the only atmospheric influence to be guarded against, has a powerful influence in producing a great mortality, and the effect of that influence is inversely as the abundance of nutritive food, clothing and fuel at the command of the people to guard against it. The most fatal month in the year to human life is January, the per centage deaths of the total number of deaths ranging from 10 to 14½ per cent. The next most fatal month is February; and a singular uniformity prevails in the per centage deaths to the whole deaths in all the towns; then follow December and March, and the mortality diminishes until July and August, gradually increasing again with the fall of the year until it is at its maximum in January; in short, having a close correspondence with the progress of the sun in the ecliptic, the maximum intensity being when the sun is furthest removed from our latitudes, and its minimum effects occurring when the sun is in the neighbourhood of the northern tropic. It might probably be more correct to say that the mean mortality accords with the monthly mean temperature. The tables exhibit a somewhat singular feature in the proportional excess of deaths in Edinburgh in the summer months over the other towns, combined with a somewhat smaller proportion in the month of January, but an excess in the month of December. These anomalies very probably originate in the topography of the town, or are attributable to the averages being for three years only for Edinburgh and for five years for the other towns.

It is much to be regretted that circumstances have prevented the construction of monthly tables of mortality for five years instead of three for Edinburgh. Had this been the case, the proportionate mortality would not have been quite so favourable for that city during the winter months as is made to appear by these tables. The amount of deaths from fever and influenza, which was excessive in the beginning of 1837, is included in the results brought forward for the other towns, but it has not been obtained for Edinburgh. The relative proportions of the deaths during the different months, as exhibited in these tables, are therefore more correct for the other towns than they are for that city.

Whatever influence the vicissitudes of the atmosphere may have, there are obviously other causes greatly affecting mortality, such as a free circulation of air, drainage, cleanliness, temperance, the abundance of wholesome food, clothing, fuel, and the occupations of the people.

One of the objects of research in vital statistics is to make comparisons of the effects produced on different communities similarly situated with regard to these various circumstances, and to observe how far the same causes produce the same results on the human frame.

But it must be of rare occurrence to find two towns similarly situated in all these respects. In the towns for which these tables are constructed, it will be observed, that while some approach near to each other in some points, both in regard to the sanitary condition of the towns and in the circumstances of the people, yet they differ in others, which operate in producing a greater or less amount of mortality.

From the tables in which the deaths are brought forward for a series of years, it will be seen that the greatest number of deaths at the very early ages take place in Glasgow and Dundee, towns possessing many features common to both; their manufactures, commerce, and public works resemble each other, the wages of the working classes, the appearance of their houses, and the rents paid for them, are much the same, and the price of food is nearly equal in both places. The deficiency of proper drainage, the accumulation of impurities, and the want of a free circulation of air, are very observable in both cases. In both towns there is a large proportion of the wretchedly poor, though the largest proportion is decidedly in Glasgow.

It appears that the average annual amount of mortality in Glasgow for the last five years is as 1 to 31·10, or 3·21 per cent.; and in Dundee, for the same years, as 1 to 38·37, or 2·60 per cent. We have already stated that the accuracy of these results wholly depend on whether or not the number of deaths which take place in these towns, with burial in the country, or the deaths that take place in the country, with burial in the towns, balance each other. A more correct judgment may therefore be formed of the relative mortality of these towns by a comparison of the ages at which death takes place than by these general results.

It will be found that the proportion of deaths at Glasgow under one year of age, to the population on an average of years, exceeds that of Edinburgh by 0·178 per cent. In Dundee the proportion is greater than in Edinburgh by 0·086 per cent. The excess of deaths at one and under two years of age in Glasgow over those in Edinburgh is 0·21 per cent.; in Dundee 0·07 per cent. At two and under five years of age the excess of deaths in Glasgow is greater than in Edinburgh by 0·18 per cent., and in Dundee by 0·11 per cent. Again, it appears that in Glasgow the average annual proportion of deaths under five years of age, to the mean population, is 1·43 per cent., and to the whole average annual deaths is 44·58 per cent.; while in

Dundee the proportion of deaths under these years, to the population, is 1·13 per cent., and to the whole average deaths is 46·82 per cent.

In Glasgow 1·79 per cent. per annum of the population die under 20 years of age, and in Dundee 1·38 per cent. It will be observed, however, that the proportion of deaths under 20 years of age in Glasgow, to the total deaths, is 55·95 per cent., whereas in Dundee it amounts to 57·52 per cent.

It will also be observed, that at the higher ages there is an excess of deaths in Edinburgh over either Glasgow or Dundee, with the exception of those above 95 years of age, at which ages the excess of deaths takes place in Glasgow and Dundee. Again, 1·41 per cent. per annum of the population of Glasgow die above 20 years of age, and that 1·02 per cent. of the population of Dundee die above that age: 44·04 per cent. of the whole deaths taking place in Glasgow above that age, and 42·47 per cent. in Dundee.

It is plain, therefore, that as the proportion of deaths at the different ages under 5 years, under 20, and above 20 years of age, to the whole deaths, leads to the belief that Dundee is a less healthy town than Glasgow, and that the deaths at the two former ages, to the population, show that Glasgow is the least healthy of the two towns, the inference to be drawn is either that those deaths which take place beyond the limits of Glasgow, and in which burial takes place within the limits, exceed the number of those cases in which death takes place in the town, and the burials elsewhere, or that the opposite of this is the case in Dundee.

There is a very considerable difference between the local circumstances of Perth and those of Glasgow or Dundee. This town is chiefly dependent on its commerce with the rich agricultural districts which surround it; it has some factories of flax, woollen and cotton, but these are of inconsiderable extent. Of the towns for which we have constructed tables, Edinburgh approaches the nearest to it, though there are some important particulars in which they differ considerably.

It will be seen, that the average annual mortality in Edinburgh for the last five years, to the mean population of these years, is as 1 to 34·90, or 2·86 per cent., and in Perth it is as 1 to 37·87, or 2·64 per cent. It will also be observed, that there is an excess in the proportion of deaths in Edinburgh at nearly all the ages up to 50 years, over those which took place at Perth, with the exception of those at 2 and under 5, and those at 15 and under 20 years; and that the greatest proportion of deaths at all the ages above 50 years in these towns is in Perth. It will be observed, that the difference in the proportion of these deaths, at any of the ages stated in the table, does not extend to high numbers; the greatest excess in Edinburgh being of the deaths in one year, which amounts to 0·07 per cent of the whole population; and the greatest proportion of deaths in Perth over those of Edinburgh is at the age of 70 and under 75 years, which amounts to 0·09 per cent.

It may further be observed, that in Edinburgh the deaths under 20 years of age amount annually to 1·11 per cent. of the population, and to 43·88 per cent. of the whole deaths; while in Perth the deaths under the same age amount to 1·01 per cent. of the population, and to 38·26 per cent. of the whole deaths. Again, the deaths in Edinburgh above 20 years of age amount to 1·43 per cent. of the population, and to

56·11 per cent. of the whole deaths; while in Perth the deaths above the same age amount to 1·63 per cent. of the population, and to 61·73 per cent. of the whole deaths.

The differences in the mortality of these two cities might evidently be traced to the local circumstances of the inhabitants, but to pursue this subject further would lead us beyond the limits of this Report.

With regard to Aberdeen, partaking as it does partly of the character of Perth as a county town, and of the character of Glasgow and Dundee in the extent of its factories for the manufacture of flax, cotton and woollen goods, the defective state of the registers prevents us from making the tables showing the causes of death so complete as for the other towns. By a careful examination of the mortality tables for this town, it will be found that they afford good reason to believe that Aberdeen is very healthy; although, as has been already stated, from some of the inhabitants being buried beyond the limits of the town, the probability is that the deaths which are recorded are not the whole deaths, and therefore the returns from the burying-grounds may be considered incomplete, and make the proportionate mortality of this town appear somewhat less than it really is.

The average annual mortality in Aberdeen appears to be as 1 to 49·72, or 2·01 per cent.; and it will be observed, that with the exception of the ages at 15 and under 20 years, there is an excess of mortality at all the ages specified in the tables up to 80 years in Edinburgh over the proportion which takes place at these ages in this town. At all the ages above 80 years, consequently, the greatest proportion of deaths which take place in these towns is in Aberdeen. It is further shown, that in Aberdeen the deaths under 20 years of age amount to 0·86 per cent. of the population, and to 43·14 per cent. of the whole deaths; and that the deaths above 20 years of age amount to 1·14 per cent. of the population, and to 56·85 per cent. of the whole deaths.

In regard to diseases, it may be observed, that there is a proportionate excess of deaths in Edinburgh over those in Glasgow, by the causes classed under the heads "aged," "diseases of the head," "of the heart," "inflammation," and by those diseases which are not distinctly brought out, as stated in the Appendix, but which are classed under the head of miscellaneous diseases. The greatest proportion of deaths by all the other diseases takes place in Glasgow. The greatest excess of deaths in Edinburgh over those of Glasgow appears to be caused by diseases of the head, amounting to 0·047 per cent. The greatest excess in Glasgow is by fever, amounting to 0·21 per cent. It is here to be observed, however, that the great excess of deaths by fever during 1837, in these towns, is included for Glasgow, though the amount has not been obtained, and is not included in this table for Edinburgh: so that the excess of deaths by fever in Glasgow over those in Edinburgh appears greater than it really is. The excess of deaths by bowel complaint in Glasgow, over those in Edinburgh, amount to 0·20 per cent.

The amount of deaths in Dundee by the different diseases being given for the same years as those in which it has been obtained for Edinburgh, the comparison is still more satisfactory than for the other towns. The greatest excess of deaths in Dundee over those in Edinburgh is caused by asthma, bowel complaint, catarrh, croup, dropsy, hooping-cough, measles, nervous diseases, scarlet fever, and small-pox; the highest excess being by measles, amounting to 0·102 per cent. The greatest proportion of deaths by all the other diseases is in Edinburgh. The highest proportion of deaths in that town over those of Dundee is by decline, and amounts to 0·137 per cent.

The names of only 33·8 per cent. of the fatal cases of disease have been ascertained for Aberdeen, and exhibited in the tables for that town; and as these bear but a small proportion to the total amount of deaths, the proportion to the population have been omitted in the tables, as they could form no data for comparison with the amount of fatal cases of disease ascertained for the other towns.

We have already called attention to the uniformity in the proportion of deaths at the different periods of life by fever and eruptive fevers, to the whole deaths, by these several diseases. Although in several instances there is a considerable difference in the proportion of these diseases to the amount of population, yet the uniform proportion of the mortality by these diseases which falls on the different ages is very striking, and leads to the belief, as before stated, that by a still more extended range of observation, and by a more correct system of registration of the fatal diseases, we might find that fixed laws regulate the amount of deaths at different ages by the several diseases.

While the proportion of deaths by fever, under five years of age, for the last three years in Edinburgh, amounted to 0·029 per cent. of the population, it amounted to 12·41 per cent. of the whole deaths by fever. In Glasgow, while the deaths by fever, at the same age, for the last five years, amounted to 0·053 per cent. of the population, they amounted to 12·07 per cent. of the whole deaths by fever; being *very* nearly the same proportion to the whole deaths by fever as in Edinburgh. Again, while the deaths by fever, under 20 years of age, for the last three years in Edinburgh, amounted to 0·070 per cent. of the population, they amounted to 29·74 per cent. of the whole deaths by fever.

In Glasgow, while the deaths by fever, at the same age, for the last five years, amounted to 0·129 per cent. of the population, they amounted to 29·05 per cent. of the deaths by fever, being still *very* nearly in the same proportion to the whole deaths by fever as in Edinburgh. Again, in Edinburgh, while the deaths by fever, above 20 years of age, during the last three years, amount to 0·165 per cent. of the population, they amount to 70·25 per cent. of the whole deaths by fever. And in Glasgow, while the deaths by fever, above that age, amount to 0·316 per cent. of the population, they amount to 70·94 per cent. of the whole deaths by fever.

In the other towns, the proportions of the deaths by fever, at the different ages, to the whole deaths by fever, are not so *very* close to each other as they are in Edinburgh and Glasgow; yet the difference is not great, and may be accounted for partly by the defective state of the registers, as well as by some local circumstances which cannot yet be clearly traced.

We have had time only to construct tables similar to those immediately referred to, for a few of the fever cases, exhibited in the Reports of the Registrar-General for towns in England. As those we have constructed, however, show very striking results for Manchester and Liverpool, we here insert the results corresponding with those above quoted.

VII.—*Proportions of Deaths by Fever, at different Ages, during* 1839.*

Ages.	In Manchester.		In Liverpool.	
	Of the whole Deaths by Fever,	Of the Population.	Of the whole Deaths by Fever.	Of the Population.
	Per cent.	Per cent.	Per cent.	Per cent.
Under 5 years of age .	16·037	0·018	15·081	0·016
Under 20 years . . .	38·679	0·043	30·163	0·033
20 years and upwards .	61·320	0·069	69 836	0·077
Total . . .	100·000	0 113	100·000	0·111

The comparison between these two towns and those of Scotland presents equally remarkable coincidences in regard to measles, scarlet fever, and small pox.

The following results brought out for other diseases, in a similar manner, show, that were the Scotch registers so improved that we could rely upon their accuracy, there is a great probability that the proportion of deaths at different ages, in a given population, by any particular disease, would be found to be nearly uniform, whatever the total amount might be; and that when there was a departure from a certain proportion at these ages, a local cause might be found to account for it.

It will be found from the tables showing the average annual amount of deaths by the several diseases, that the proportion of the total deaths by the diseases included under the head of bowel complaints, amounts to 0·167 per cent. of the population in Edinburgh; to 0·171 per cent. of the population in Perth; to 0·263 per cent. in Dundee; and to 0·370 per cent. in Glasgow.

VIII.—*Annual average Proportion which the Deaths by Bowel Complaints, at different Ages, bear to the whole Annual average Deaths by that Complaint, and also to the Population, in different Towns.*

Ages.	Edinburgh.		Perth.		Dundee.		Glasgow.	
	Proportion to whole Deaths.	Proportion to the Population.	Proportion to whole Deaths.	Proportion to the Population.	Proportion to whole Deaths.	Proportion to the Population.	Proportion to whole Deaths.	Proportion to the Population.
	Per cent	Per cent.	Per cent	Per cent.	Per cent	Per cent.	Per cent	Per cent.
Under 3 years of age,	79·106	0·132	79·041	0·135	77·919	0 204	84·066	0·311
Under 5 years . .	85·014	0·142	82·634	0·142	84·288	0·221	90·693	0·335
Under 20 years . .	87·608	0·146	85·029	0·146	86·836	0·228	93·475	0·346
20 years and upwards	12·391	0·020	14·970	0·025	13·163	0·034	6·524	0·023

We have made out tables like the above for some of the other diseases. The results are all similar to those in the following table for inflammation, in which there is a great variation in the proportions for the different towns. It is to be doubted, however, if much reliance can be placed on the accuracy with which these diseases are recorded in the registers.

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* The data from which these proportions are obtained will be found in the Third Annual Report of the Registrar-General of Births, Deaths, and Marriages in England, see pages 70 and 74. It will be observed, that the deaths by remittent ever and typhus are included in these proportions.

It will be found by the tables above referred to, that the proportion of the total annual average deaths by inflammation to the mean population of Edinburgh amounts to 0·196 per cent.; in Glasgow to 0·185 per cent.; in Perth to 0·139 per cent.; in Dundee to 0·143 per cent.

IX.—*Proportion which the Deaths by Inflammation, at different Ages, bears to the whole Deaths by Inflammation, and also to the Population, in different Towns.*

Ages.	Edinburgh.		Glasgow.		Perth.		Dundee.	
	Proportion to whole Deaths.	Proportion to the Population.	Proportion to whole Deaths.	Proportion to the Population.	Proportion to whole Deaths.	Proportion to the Population.	Proportion to whole Deaths.	Proportion to the Population.
	Percent	Percent.	Per cent.	Per cent	Per cent.	Percent.	Per cent.	Per cent.
Under 5 years of age	44·103	0·086	44·934	0·083	32·352	0·045	51·361	0·073
Under 20 years . .	55·651	0·109	58·006	0·107	44·117	0·061	62·645	0·089
20 years and upwards	44·348	0·087	41·993	0·077	55·882	0·078	37·354	0·053

It has been seen that the proportion of deaths under five years of age amounted in the three years specified to 0·85 per cent. of the population in Edinburgh, and to 33·62 per cent. of the whole deaths in that town. For England it was 0·871 per cent., and 39·59 per cent. of deaths. In London the proportion of deaths under the same age, in the years specified, amounted to 1·066 per cent. of the population, and to 40·49 per cent. of the whole deaths. In Glasgow, the proportion of deaths under five years of age in five years specified amounted to 1·43 per cent. of the population, and to 44·58 per cent. of the whole deaths. It will be found that there is a greater mortality under five years in London than in the Scotch towns; but the mortality in Manchester exceeds that of the most unhealthy Scotch towns.

In Edinburgh the proportions of deaths under 20 years of age amounted to 1·119 per cent. of the population, and to 43·88 per cent. of the whole deaths. For all England the proportions were respectively 1·118 and 50·83 per cent. In London the proportion of deaths under that age amounted to 1·296 per cent. of the population, and to 49·23 per cent. of the whole deaths. In Glasgow the proportion of deaths under that age amounted to 1·79 per cent. of the population, and to 55·95 per cent. of the whole deaths; and in Manchester the proportion of deaths under the same age amounted to 2·027 per cent. of the population, and to 60·99 per cent. of the whole deaths.

In Edinburgh the proportion of deaths above 20 years of age amounted to 1·43 per cent. of the population, and to 56·11 per cent. of the whole deaths. In England these proportions were respectively 1·082 and 49·17 per cent. And in London the proportion of deaths amounted to 1·36 per cent. of the population, and to 50·77 per cent. of the whole deaths. In Manchester only 39·01 per cent. of the whole deaths take place above 20 years of age, and 1·296 per cent. of its population.

It is worthy of observation, that the mortality at the different ages in

Manchester (the greatest manufacturing town in England) bears nearly the same proportion to that of London, that the mortality at these ages in Glasgow (the greatest manufacturing town in Scotland) bears to that of Edinburgh.

The proportion of deaths under five years in Manchester is 10·83 per cent. of the whole deaths, and 0·639 per cent. of the population greater than in London; and in Glasgow the proportion of deaths under the same age is 12·07 per cent. of the whole deaths, and 0·67 per cent. of the population greater than in Edinburgh. Again, it will be found that the proportion of deaths above twenty years of age in Manchester is 11·76 per cent of the whole deaths, and 0·040 per cent. of the population less than in London; and in Glasgow the proportion of deaths above that age is 12·07 per cent. of the whole deaths, and 0·016 per cent. of the population less than in Edinburgh.

In London the average annual proportion of deaths during the years 1837-38, 1838-39, and 1839-40, to the mean population of these years, was as 1 to 37·34, or 2·67 per cent.; in Manchester as 1 in 28·06, or 3·563 per cent.; in Liverpool as 1 to 28·30, or 3·537 per cent.; in Leeds as 1 to 36·76, or 2·720 per cent.; and in Birmingham as 1 to 36·82, or 2·716 per cent.*

We have already had occasion to notice the tendency which reckless poverty and the absence of artificial comforts in the dwellings of a large proportion of the town population has to increase the number of improvident marriages, and consequently of births. The effect of extreme poverty in extending disease and mortality among the inhabitants of these towns, is also apparent from the results exhibited in the preceding pages. Other causes are mentioned as having a powerful influence in producing those fatal effects observable in the amount of mortality in large towns, such as intemperance and inattention to cleanliness, together with a want of proper drainage and a free circulation of air among the houses of the poor.

The abuse of spirituous liquors has been well described as "at once the cause and consequence of destitution;" and as inattention to cleanliness may also be considered as an universal attendant of extreme poverty, it is not easy to see how the effects of the one can be traced without these effects being found in some degree to be influenced by the other; nor, indeed, does it seem possible to distinguish the effects of extreme poverty from those of defective ventilation and draining, because the poorest people have no choice of residence, and cannot avoid congregating in such numbers as to imply very deficient ventilation.

It is especially to be observed with regard to the years of severe depression of trade, that the case of the really destitute poor in the manufacturing towns of Scotland is not then so bad as during the years of ordinary prosperity. Many of the better class of operatives require to submit to a much greater degree of suffering and privation than they are accustomed to, and the effects of these privations are much to be dreaded in the event of an unhealthy season setting in upon them. But the extraordinary exertions made by subscriptions from the more wealthy inhabitants, and from public funds, to supply food and clothing to the poor, by means of soup kitchens, distribution of old clothes, and otherwise, over and above the ordinary parochial relief, often renders the condition of the really destitute much better at these times than it is under ordinary circumstances. We cannot, therefore, form such a correct judgment of the effects of destitution during these years on the mortality of large towns in Scotland as is generally imagined.

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* In regard to this comparison of the mortality in the English and Scotch towns, particularly in early life, it is to be observed, that in several of the former, in the years compared, there were unusually severe epidemics of small-pox, measles, and scarlet fever, the mortality from which falls almost entirely on the early periods of life. Thus in London, in 1838–39, small-pox caused 3,817 deaths, or 1 in 13·8 of the whole mortality, and in 1839–40 measles and scarlet fever together caused 4,535 deaths, or 1 in 10 of the whole mortality; in Manchester in 1839–40 measles alone caused 1,131 deaths, or 1 in 8·1 of the whole mortality; in Liverpool in 1837–38 small-pox caused 634 deaths, or 1 in 7·7 of the whole mortality, and in 1839–40 measles and scarlet fever caused 934 deaths, or 1 in 9·8 of the whole mortality; while in Glasgow, and still more in Edinburgh, there have been no such virulent epidemics of these diseases.

PROCEEDINGS OF THE STATISTICAL SOCIETY OF LONDON.

Fourth Ordinary Meeting, February 20, 1843.

THOMAS TOOKE, Esq., V.P., in the Chair.

M. Victor Misson, of Brussels, was elected a foreign honorary member.

The following gentlemen were elected :—

Charles Lyall, Esq. Benjamin Smith, Esq.
Frederick Lack, Esq.

The following gentlemen were proposed as candidates for admission into the Society :—

Michael Connal, Esq. Rev. Howell Phillips, M.A.
Edward Cresy, Esq.

A paper was read by Henry Tremenheere, Esq. "On the Agricultural and Educational Statistics of Five Rural Parishes in Middlesex," (*see* p. 120.)

Mr. Fletcher then read some "Contributions to the Agricultural Statistics of the South-Eastern Counties," (*see* p. 130.)

General Anniversary Meeting, March 15, 1843.

The Most Noble the MARQUIS OF LANSDOWNE, President, in the Chair.

The Ninth Annual Report of the Council to the Society, with the Auditors' Report and Balance-sheet, was read and adopted, (*see* p. 89.)

John Dunlop, Esq., and Thomas Attree, Esq. were appointed Scrutineers of the Ballot for the Council and Officers, and those gentlemen having declared the result of the votes, it was announced from the chair that the following noblemen and gentlemen were elected as the Officers and Council for 1843–4 :—

Officers.

The Right Hon. Lord Ashley, M.P., *President.*
G. R. Porter, Esq., F.R.S., *Treasurer.*
Joseph Fletcher, Esq.,
W. A. Guy, Esq., M.D., } *Honorary Secretaries.*
W. D. Oswald, Esq.,